CSGE602055 Operating Systems
CSF2600505 Sistem Operasi
Week 01: Review2 & Scripting

Rahmat M. Samik-Ibrahim

University of Indonesia

`http://rms46.vlsm.org/2/207.html`
`Always check for the latest revision!`

REV123 5-Mar-2018

Operating Systems 2018-1 (Room 3114 Tue/Thu)
Class: A (10:00-12:00) | B (13:00-15:00) | C (16:00-18:00)

Week	Schedule	Topic	OSC9
Week 00	06 Feb - 12 Feb 2018	Intro & Review1	Ch. 1, 16
Week 01	13 Feb - 19 Feb 2018	Review2 & Scripting	Ch. 1, 2
Week 02	20 Feb - 26 Feb 2018	Protection, Security, Privacy,	Ch. 14, 15
		& C-language	
Week 03	27 Feb - 05 Mar 2018	I/O, BIOS, Loader, & Systemd	Ch. 13
Week 04	06 Mar - 12 Mar 2018	Addressing, Shared Lib, & Pointer	Ch. 8
Week 05	13 Mar - 19 Mar 2018	Virtual Memory	Ch. 9
Reserved	20 Mar - 24 Mar 2018		
Mid-Term	03 Apr 2018	13:00 - 15:30 (UTS)	
Week 06	05 Apr - 11 Apr 2018	Concurrency: Processes & Threads	Ch. 3, 4
Week 07	12 Apr - 18 Apr 2018	Synchronization	Ch. 5, 7
Week 08	19 Apr - 25 Apr 2018	Scheduling	Ch. 6
Week 09	26 Apr - 07 May 2018	File System & Persistent Storage	Ch. 10, 11, 12
Reserved	08 May - 14 May 2018		
Week 10	15 May - 21 May 2018	I/O Programming	
		& Network Sockets Programming	
Reserved	22 May - 22 May 2018		
Final	23 May - 26 May 2018	(UAS)	
Deadline	07 Jun 2018 16:00	Extra assignment **deadline**	

- The Check List (Operating Systems)
    - ☐ **Starting Point**: http://rms46.vlsm.org/2/207.html
    - ☐ **Text Book**: any recent/decent OS book but map it to **OSC9**.
    - ☐ Create **public** project "os181" on your github.com account.
        - ☐ Create file "README.md" and add an extra line every week. For e.g.[1]:

            ZCZC Sistem Operasi 2018 Awal (1)
            ZCZC W01 Have tried demo for week 01.
            ZCZC W02 Week 02 is done.
            ZCZC W03 Week 03 is done.

    - ☐ Encode your **QRC** with image size of approximately 250x250 pixels:
        "OS181 CLASS ID GITHUB-ACCOUNT SSO-ACCOUNT SIAK-Full-Name"
        Special for Week 00: Mail your **embedded** QRC to: os181@vlsm.org
        with Subject: [W00] CLASS ID SIAK-NAME.
    - ☐ Write your Memo (with QRC) **every week**.
    - ☐ Using your **SSO** account, login to badak.cs.ui.ac.id via
        kawung.cs.ui.ac.id.
        - ☐ Check folder badak:///extra/Week00/
        - ☐ Every week, copy the weekly demo files to your own home directory.
            Eg. for Week00:
            cp -r /extra/Week00/W00-demos/ W00-demos/

---

[1]Week 00 line is optional. The following "ZCZC WXX" weekly tags are mandatory.

Agenda

Week 01: Review2 & Scripting

- Reference: (OSC9-ch1 OSC9-ch2 Scripting demo-w01)
- http://rms46.vlsm.org/1/70.pdf
- Intelectual Property Right (IPR)
- Operating System Services
- User Operating System Interface
- System Calls
- Types of System Calls
- System Programs
- Operating System Design and Implementation
- Operating System Structure

Intelectual Property Right (IPR)

- Rahasia Dagang *(Trade Sceret)* — UU no. 30/2000.
- Desain Industri *(Industrial Design)* — UU no. 31/2000.
- Desain Tata Letak Sirkuit Terpadu *(Integrated Circuit Layout Design)* — UU no. 32/2000.
- Paten *(Patent)* — UU no. 14/2001.
- Hak Cipta *(Copyright)* — UU no. 19/2002.
- Konsekuensi HKI
- HKI Perangkat Lunak
- Lisensi Perangkat Lunak: GNU GPL, EULA. Public Domain, Apache, Microsoft Public License.

Free Software

- Free Software Definition (FSF)
  0. The freedom to run the program as you wish, for any purpose (freedom 0).
  1. The freedom to study how the program works, and change it so it does your computing as you wish (freedom 1). Access to the source code is a precondition for this.
  2. The freedom to redistribute copies so you can help your neighbor (freedom 2).
  3. The freedom to distribute copies of your modified versions to others (freedom 3). By doing this you can give the whole community a chance to benefit from your changes. Access to the source code is a precondition for this.
- Free Software vs. Open Source Software.
- Copyleft Software.

Software Licenses

- 3-clause BSD license and 2-clause BSD license (BSD-X-Clause)
- Apache License 2.0 (Apache-2.0)
- Artistic License 2.0 (ArtisticLicense2)
- Common Development and Distribution License (CDDL-1.0)
- Eclipse Public License (EPL-1.0)
- Educational Community License 2.0 (ECL2.0)
- Expat License (Expat) aka. MIT license (MIT)
- GNU Affero General Public License v3 (AGPL-3.0)
- GNU All-Permissive License (GNUAllPermissive)
- GNU General Public License (GPL)
- GNU Lesser General Public License (LGPL)
- Microsoft Public License (MS-PL)
- Mozilla Public License 2.0 (MPL-2.0)
- "Public Domain" (PublicDomain)
- X11 License (X11License)

Potpourri

- Mobile/Distributed/Client-Server/Peer-to-Peer Computing.
- Real-Time Computing: Hard Real-Time vs. Soft Real-Time.
- Operating System Comparison: Android, *BSD, GNU/Linux, iOS, Mac OS, Windows.
- Operating System Services: UI (GUI, CLI); Program Executing; I/O Operations; File Systems Manipulation; Communication; Error Detection; Resource Allocation; Accounting; Protection & Security.
- System Calls: Process Control; File Management; Device Management; Information Maintenance; Communications; Protection.
- Application Programming Interface (API)
- Standard C Library.
- System Programs.
- Microkernel System Structure.
- Loadable Kernel Modules.
- Virtualization and Cloud System.

Scripting

- Readings (do Google!)
    - Machtelt Garrels: Bash Guide for Beginners.
    - Mendel Cooper: An in-depth exploration of the art of shell scripting — Advanced Bash-Scripting Guide.
    - Jan Goyvaerts: Regular Expressions — The Complete Tutorial.
- The ATM Way (Amati, Tiru, Modifikasi)[1].
    - *Clone* Demo https://github.com/UI-FASILKOM-OS/demo.git
    - **GSGS — ATM**: Google Sana, Google Sini: Amati, Tiru, Modifikasi!
    - Pilih Media: Badak, BYOD, WSL (Windows 10), CYGWIN.
    - Belajar **login** dan **logout** dengan ssh atau putty[2].
    - Belajar editor yang bagus punya buatan (**vi**).
- Belajar beberapa perintah **Command-Line Interface** (CLI).
    - shell (Bash)
    - basic CLI: cat, cd, cp, ls, man, more, mv, rm, touch, wc.
    - vi, sed, awk, git.

---

[1]Romi Satria Wahono sudah menggunakan istilah ini sejak tahun 2007 (Google).
[2]Sesuai dengan keyakinan dan kepercayaan masing-maing.

```
demo@badak:~$
demo@badak:~$ PS1=">>>>> $ "
>>>>> $
>>>>> $ git clone https://github.com/UI-FASILKOM-OS/demo.git demo-here
Cloning into 'demo-here'...
remote: Counting objects: 1697, done.
remote: Compressing objects: 100% (64/64), done.
remote: Total 1697 (delta 52), reused 60 (delta 24), pack-reused 1608
Receiving objects: 100% (1697/1697), 11.87 MiB | 3.76 MiB/s, done.
Resolving deltas: 100% (1001/1001), done.

>>>>> $ ls -F demo-here/
demos/              demos-170828-2222.zip  demostar.tgz  README.md
demos-170827-1833.zip  demos-170905-0943.zip  LICENSE       zzzThis
>>>>> $ cd demo-here
>>>>>  $ ls -F
demos/              demos-170828-2222.zip  demostar.tgz  README.md
demos-170827-1833.zip  demos-170905-0943.zip  LICENSE       zzzThis
>>>>>  $ cd demos/
>>>>>  $ ls -F
week00-introduction/ week03-boot/      week06-CnFork/      week09-File-Storage-System/
week01-scripting/ week04-pointer-io/  week07-sync-thread/     week10-video-review/
week02-c-and-security/  week05-memory/     week08-scheduling-sockets/
>>>>>  $ cd week01-scripting/
```

```
>>>>> $ pwd
/home/demo/work/demo-here/demos/week01-scripting
>>>>> $ ls -al
total 60
drwxr-xr-x  2 demo demo 4096 Sep 11 15:28 .
drwxr-xr-x 13 demo demo 4096 Sep  5 09:43 ..
-rw-r--r--  1 demo demo 4817 Sep 11 15:16 a01-sort-script
-rw-r--r--  1 demo demo 2206 Sep 11 15:27 a02-some-command-lines
-rw-r--r--  1 demo demo  557 Sep  8 22:02 a03-does-it-exist
-rw-r--r--  1 demo demo  581 Sep 11 14:07 a04-finding-EXIST
-rw-r--r--  1 demo demo 1152 Sep 11 14:22 a05-append-a-file
-rw-r--r--  1 demo demo  549 Sep 11 14:25 a06-loop
-rw-r--r--  1 demo demo  745 Sep 11 14:45 a07-tester
-rw-r--r--  1 demo demo 1856 Sep 11 15:08 a08-banding
-rw-r--r--  1 demo demo 1779 Sep  8 21:57 a09-fixfs
-rw-r--r--  1 demo demo  614 Sep  8 21:58 a10-add-numbers
-rw-r--r--  1 demo demo 1068 Sep 11 15:20 a11-mysha1
-rw-r--r--  1 demo demo  367 Sep  8 21:59 .head
lrwxrwxrwx  1 demo demo   15 Sep  4 19:16 .shsh -> a01-sort-script
>>>>> $
```

Demo Files(1)

- a01-sort-script: folder sorting; preparing and deleting folder ".ZTEST".
- a02-some-command-lines: demo beberapa perintah CLI.
- a03-does-it-exist
- a04-finding-EXIST
- a05-append-a-file
- a06-loop

Demo Files(2)

- a07-tester
- a08-banding
- a09-fixfs
- a10-add-numbers
- a11-mysha1

Some Essential Commands

man   manual. Eg "man man"

ls   list directory contents. Eg. "ls -al"

date   print or set the system date and time. Eg. "date +%Y"

tee   read from standard input and write to standard output and files.
       Eg. "ls -al | tee listing.txt"

diff   compare files line by line. Eg. "diff file1.txt file2.txt"

wc   print newline, word, and byte counts for each file.
       Eg. "wc file.txt"

sort   sort lines of text files. Eg. "sort file1.txt"

- (to do)
- (see OLD 02-scripting)

awk

- (to do)
- (see OLD 02-scripting)

Regex: Regular Expressions

- $\lceil$ˆ$\rfloor$ — matches a beginning-of-line (meaningless).
- $\lceil$ˆ$\$\rfloor$ — matches a beginning-of-line + end-of-line (empty line).
- $\lceil$ˆhello$\$\rfloor$ — matches just "hello" in a line.
- $\lceil$ˆ(From|To|CC):$\rfloor$ — matches $\lceil$ˆ(From:$\rfloor$ or $\lceil$ˆ(To:$\rfloor$ or $\lceil$ˆ(CC:$\rfloor$.
- $\lceil$[01]?[0-9]|2[0-3]$\rfloor$ — 00-23
- $\lceil$[01]?[4-9]|[012]?[0-3]$\rfloor$ — 00-23

Week 01: Problems

- Tugas Minggu 01 (Week 01) ada dua:
  - Memo Week01: to be checked at break of the first lecture of WEEK 01.
  - Try Demo Week01 and write in "README.md" (os181), something like: "ZCZC W01 Telah mencoba demo Week01".
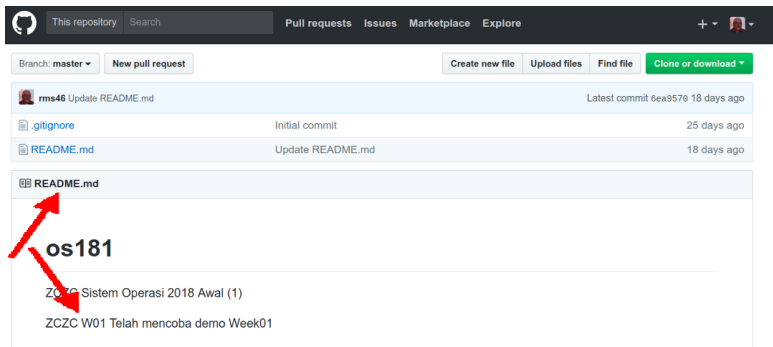

Figure: README.md: ZCZC W01 . . .

- Reference: (OSC9 chapter 1 + chapter 2)

☐ **How to improve this document?**

The End

☐ This is the end of the presentation.

☒ This is the end of the presentation.

- This is the end of the presentation.